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Low-Energy Nuclear Physics Research at iThemba LABS: Highlights from the H-Line Facility

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Photon strength functions (PSFs) are fundamental quantities in nuclear physics, describing the average electromagnetic decay properties of excited nuclei. Accurate PSF information is essential for modeling nuclear reactions relevant to both astrophysical processes and nuclear structure.

At iThemba LABS, a dedicated facility has been developed for low-energy nuclear physics experiments that enhance our understanding of nuclear structure, reaction mechanisms, and nucleosynthesis. In this talk, I will present experimental developments and highlight recent radiative proton and alpha capture measurements aimed at probing the shape of the PSF, testing the validity of the Brink–Axel hypothesis using (p,γ) reactions, and investigating the astrophysical important (α,γ) reactions.

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